OMI UVB Level 2G (OMUVBG) README File

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OMUVBG High Level Overview:

This is the main program for the OMUVBG Product Generation Executive (PGE).

The OMUVBG PGE creates an Ozone Monitoring Instrument (OMI) daily Level 2G (L2G) gridded data product file from (as many as) 16 OMI orbital OMUVB Level 2 (L2) swath data product files.

Each OMI L2G product file contains 24 UTC hours of OMI L2 data from a single OMI L2 product subsetted onto a longitude-latitude grid.

An OMI L2G day is defined to be the 24 hours that lie between UTC times of 0 hours, 0 minutes, 0 seconds and 23 hours, 59 minutes, 59.999999 seconds.

The OMI L2G product currently excludes L2 data collected in spatial and spectral zoom modes.

The format of the OMI L2G product files is consistent with the document entitled "HDF-EOS Aura File Format Guidelines" by C. Craig et al.

OMUVBG Algorithm:

The OMUVBG PGE populates each cell in the L2G grid with data for all L2 "scenes" that
1) have observation times that lie within the L2G day in question,
2) have centers that lie within the L2G grid cell in question, and
3) are "good".

The OMUVBG PGE makes use of different definitions of "good" to populate the L2G grids that correspond to different L2 products.

In the case of the OMI L2G product named OMUVBG, which is L2G for the L2 product named OMUVB, the definition of a "good" scene is one that has
i) a solar zenith angle that is less than or equal to 88.0 degrees, and
ii) CS erythemal daily dose is not equal to missing value.

The OMI L2 data that are reproduced in the OMI L2G product are not averaged or weighted in any way by the OMUVBG PGE.

Adopted L2G Grid:

The adopted L2G grid is a 0.25-degree by 0.25-degree grid in longitude and latitude. The dimensions of this grid are 1440 by 720. The origin of the

grid is at lower left. That is, the grid cell at coordinates (1, 1)
is centered at (longitude = -179.875 , latitude = -89.875),
and the grid cell at coordinates (1440, 720)
is centered at (longitude = 179.875 , latitude = 89.875).

Each "good" L2 scene is mapped onto only one L2G grid cell.

The number of L2 scenes that are mapped onto a given L2G grid cell can range from 0 to 15. These data are stored in an additional dimension of the grid.

The adopted L2G grid is consistent with the document entitled "Definition of OMI Grids for Level 3 and Level 4 Data Products" by J.P. Veefkind et al.

OMUVB Subroutines Called:

OMUVB_ReadPCF - Reads OMUVB PCF.
OMUVB_FindL2GDay - Finds L2G day of year and other temporal items.
OMUVB_EndInFailure - Ends OMUVB execution in failure.

OMUVB_OpenL2File - Opens L2 file and swath.
OMUVB_ReadL2ECSMeta - Reads ECS Metadata from L2 file.
OMUVB_ReadL2SwathMeta - Reads swath-level Metadata from L2 file.
OMUVB_ReadL2FieldInfo - Reads names of swath fields from L2 file.
OMUVB_ReadL2FieldMeta - Reads swath-field Metadata from L2 file.
OMUVB_ReadL2GeoLine - Reads one line of geolocation from L2 file.
OMUVB_ReadL2DatLine - Reads one line of data-field data from L2 file.
OMUVB_CloseL2File - Closes L2 swath and file.

OMUVB_OpenL2GFile - Opens L2G file and creates grid.
OMUVB_WriteL2GFileMeta - Writes file-level Metadata to L2G file.
OMUVB_WriteL2GGridMeta - Writes grid-level Metadata to L2G file.
OMUVB_WriteL2GGeoGrid - Writes geolocation fields to L2G file.
OMUVB_WriteL2GDatGrid - Writes data fields to L2G file.
OMUVB_WriteL2GFieldMeta - Writes grid-field Metadata to L2G file.
OMUVB_WriteL2GFileMeta - Writes grid-field Metadata to L2G file.
OMUVB_CloseL2GFile - Closes L2G grid and file.
OMUVB_WriteL2GECSMeta - Writes ECS Metadata to L2G files.
read_ntimes - Reads number of lines from L2 file

External Function Called:

OMI_SMF_setmsg - OMI messaging function.

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